

## ABSTRACT OF THE DISCLOSURE

Optical systems of the present invention include a plurality of optical processing nodes in optical communication via a plurality of signal varying devices. A first signal varying device includes an optical fiber configured to produce Raman scattering/gain in a signal wavelength range and a first signal variation profile. A first pump source is configured provides sufficient pump power in a plurality of first pump wavelengths to stimulate Raman scattering/gain in the optical fiber within the signal wavelength range. A second signal varying device is provided having a second signal variation profile to produce a cumulative signal variation profile that differs from the first and second signal variation profiles

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